

From: Kyla Bennett KBennett@peer.org
Subject: Re: Some questions and answers - letter to OBBOH member from Dr. Green
Date: December 29, 2021 at 6:09 PM
To: Meegan Lancaster mlancaster@oakbluffsma.gov
Cc: Kristen Mello WRAFT klm.wraft@gmail.com



Hi, Meegan. Kristen will definitely be better able to respond, but here are my thoughts:

1. This PDVF-HFP is a red herring, for two reasons. First, as Dr. Peaslee has said repeatedly, in order to make fluoropolymers like PDVF-HFP, other PFAS are used. They then hitchhike on the blades. Second, we are finding PFAS in our TARGETED analysis of the grass. This means that these PFAS are either the hitchhikers, or they are from another source. But they are there. The consultants' own tests show this.
2. She is wrong. We know the PFAS leaches off...Dr. Peaslee's paper which will come out in the beginning of 2022 will explore this in more detail, and we are currently running some turf weathering tests. But, between the UV light, the rain, and the abrasion, the PFAS do leach off into the soil, groundwater, and nearby surface waters. (This can also be seen in the lower amounts of PFAS in older turf samples.)
3. This is irrelevant...except for the fact that you do not want to add MORE contamination on an already contaminated site. It's non-sensical. I'm not even sure what her point is...since there is already PFAS on the island, it's okay to put more? She has ZERO evidence to back up her claim "no aquifer has ever been contaminated, whether with PFAS or any other hazardous chemical, by plastic grass." I would ask her to provide those studies.

Hope this helps.

Best,

Kyla

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From: Meegan Lancaster <mlancaster@oakbluffsma.gov>
Sent: Wednesday, December 29, 2021 5:23 PM
To: Kyla Bennett <KBennett@peer.org>
Cc: Kristen Mello WRAFT <klm.wraft@gmail.com>
Subject: Re: Some questions and answers - letter to OBBOH member from Dr. Green

Hi Kyla -

Thanks for looking at this. I appreciate another set of scientific eyes on this.

-ML.

Sent from my iPhone

On Dec 29, 2021, at 11:03 AM, Kyla Bennett <KBennett@peer.org> wrote:

Yes. Happy to help. Probably won't get to it until later this afternoon, but will send you some information.

Best,

Kyla

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From: Meegan Lancaster <mlancaster@oakbluffsma.gov>
Sent: Wednesday, December 29, 2021 10:51 AM
To: Kristen Mello WRAFT <klm.wraft@gmail.com>; Kyla Bennett <KBennett@peer.org>
Subject: FW: Some questions and answers - letter to OBBOH member from Dr. Green

Hi Kyla and Kristen –

Would you be able to help me with vetting these statements made to my Board member by Dr. Green? I believe Dr. Peaslee has responded to a similar letter that was sent to Nantucket in the past. Please let me know if you need more information. Thanks!

Meegan Lancaster
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508-693-3554 x127

From: James Butterick [<mailto:jimbutterick@comcast.net>]
Sent: Monday, December 27, 2021 4:43 PM

Sent: Monday, December 27, 2021 1:15 PM
To: Bill White; tom zinno; Meegan Lancaster
Subject: Fwd: Some questions and answers

Why would she send this to me? And unless she send something similar to others, only me?

Begin forwarded message:

From: Laura Green <laura.carolyn.green@gmail.com>
Subject: Some questions and answers
Date: December 27, 2021 at 4:29:15 PM EST
To: James Butterick <jimbutterick@comcast.net>
Cc: Edmund Crouch <crouch@greentoxicology.com>
Reply-To: Green@greentoxicology.com

Dear Dr. Butterick,

I did not attend your most recent Board of Health meeting, but I understand from others that you asked several important questions about synthetic turf. Here are some answers.

1. Can synthetic turf be made without any type of PFAS in them?

At present, no.

Plastic grass, such as the product proposed for one of the high school fields, is *primarily* polyethylene. This type of plastic, as you know, is not a PFAS.

However, in order to extrude polyethylene, all turf-fiber manufacturers currently rely on small concentrations of a fluoropolymer processing aid, namely PVDF-HFP. This polymer is a type of PFAS, but is of no toxicological significance.

At the turf fiber-making factory, PVDF-HFP is typically mixed into the polyethylene during extrusion.

Typically, the PVDF-HFP is mixed with the polyethylene in a two-step process, both involving extrusion at high pressures, elevated temperatures, and with extreme shearing action.

First, pellets of PVDF-HFP and polyethylene are mixed and extruded to produce a masterbatch at around 1% to 5% PVDF-HFP.

Second, this masterbatch is then pelletized, mixed to around 100 parts per million (ppm) with polyethylene pellets, and then the resultant mixture is used for the

final extrusion.

As you and I have discussed during a prior meeting, this PFAS-polymer, PVDF-HFP, is also used in various surgical materials, such as various drug-eluting stents, sutures, implantable meshes, and various wearable devices.

PVDF-HFP also makes up the membranes used in desalination processes, turning ocean water into drinking water.

PVDF-HFP is also used in architectural coatings, precisely because it is so stable to the elements, such as rain, snow, wind, sunlight, and other weathering forces.

PVDF-HFP is inert, insoluble in water and most other solvents, stable to heat, stable to irradiation, and, of course, nontoxic and biocompatible.

To my knowledge, there are other processing aids, such as boron nitride and polyurethane-based elastomers, that have been proposed instead of PVDF-HFP; but, again to my knowledge, no plastic grass manufacturer uses these; and in any event, I doubt that they would be as inert or otherwise nontoxic as PVDF-HFP, so I would not recommend them.

2. Will the plastic field contaminate the aquifer?

No. As you know, Alpha Analytical Laboratories (at the direction of TetraTech) performed extensive testing of the proposed materials, and none of them came even close to failing the synthetic precipitation leaching procedure (SPLP) test.

The SPLP test was developed, by and for the U.S. EPA, back in the 1970's-1980's. It's relied on by EPA, MassDEP, and, to my knowledge, all regulatory agencies in the U.S. (and perhaps elsewhere) in order to determine whether soils or other materials could, upon weathering (specifically, under acidic rain conditions) leach heavy metals, such as arsenic and lead, and/or various organic materials, including the six PFAS of concern here in Massachusetts (along with many other PFAS, not currently regulated), into stormwater, other surface waters, groundwaters, or aquifers.

These (and many other) laboratory test-results have been available online for close to a year now; and were, of course, discussed extensively at several meetings of the Martha's Vineyard Commission. I believe that these test-results changed the minds of several commissioners, many of whom had been initially opposed to any synthetic turf field for the MVRHS. There's nothing like data, I often find.

3. Are there already trace concentrations of some of the six PFAS of concern in Oak Bluffs drinking water?

Yes. As of 2020, at least, there were about 2.5 parts per trillion of some of the PFAS6 in Oak Bluffs drinking water. MassDEP is aware of this, of course. The likely source of this contamination is former use of PFAS-based aqueous firefighting foams (AFFF) in at least two places in Oak Bluffs.

As you may know, AFFF contains some 3% to 6% of the PFAS of concern. AFFF is the single largest PFAS threat to groundwaters throughout the U.S. and much of the world. In contrast, despite the deployment of tens of thousands of plastic grass fields, here and abroad, since the 1960's, no aquifer has ever been contaminated, whether with PFAS or any other hazardous chemical, by plastic grass.

Please feel free to call me or email me if you'd like to discuss this or related topics.

With best wishes to you and yours for the New Year,
Laura

Laura C. Green, Ph.D., D.A.B.T.

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